Don't ompanies CARE? **Page 6**

COMPUTERWORLD

The Newsweekly for the Computer Community

EDPeople Bad Advisors For MIS! **Page 3**

Weekly Newspaper – Second-class postage paid at Boston, Mass.

Vol. 2, No. 1   Cambridge, Massachusetts, January 3, 1968   Price: $9/year

Figures Given On Fast 360 DOS Retrieval System

CAMBRIDGE, MASS. – The bench-mark timings, and the specific advantages claimed for the Model 101 Information Retrieval System (which was reported in COMPUTERWORLD December 20) were provided by its writers, the Computer Corporation of America, here this week. They used 24,000 records taken from the U.S. Census, and containing ten easily codable fields. The operations took under three seconds to effectively search 24,000 records – an overall average under 100 usecs per record searched in the worst case – or 500 milliseconds per find (also in the worst case, where the search only found five out of the 24,000 people involved had the required criteria).

The system was tested on a 360/40 under DOS. It will operate using 360/30's and up, and an OS version is being prepared.

The advantages claimed and bench-mark details are given on page 5.

B 3500s Win Monster USAF Order; New Procurement Saves 30% Of Cost

WASHINGTON, D.C. – Burroughs Corp. was selected as the top vendor in the rerun of the Air Force Base Level Data Automation Standardization Program, Phase II.

The order calls for some 135 Burroughs B3500 computer systems to be supplied over the next three years for use at Air Force bases around the world in the automation of personnel and accounting tasks. The computers involved are valued at $60 million.

The original vendor competition for the computer supplier to the

A Burroughs 3500 system, similar to the 135 ordered by the USAF

Phase II project was concluded a year ago. Last April it was announced that IBM was the selected vendor, with a combination of 360/30's and 40's to be supplied at a price tag of close to $114 million. The Air Force selection committee ruled the other vendors in the competition (Burroughs, Honeywell and RCA) as non-responsive, because, the Air Force claimed, their equipment failed to meet the technical specifications of the contract. The losers, led by Honeywell, filed protests with the Air Force and with the Government Accounting Office. Under pressure from Congress, the Air Force announced in the late spring that the IBM selection was cancelled, and that each of the competing vendors would be permitted to submit new proposals.

In Detroit, a Burroughs spokesman told COMPUTERWORLD that the company "was proud to be the manufacturer selected," He said that Burroughs had submitted proposals containing many options, and as yet there had been no definition of the exact configuration and delivery schedule for each of the individual computer systems involved in the Phase II project.

Two initial systems are due to be installed in March, 1968 in Washington, D.C. and at Randolph AFB, Texas as a pilot operation. The remainder of the 135 systems are to be installed by July, 1970. The computers will be built at the firm's Detroit, and Pasadena, Calif. plants.

The greater number of replaced computers at the Air Force bases involved will be Burroughs 260 computers, installed in the earlier phase of the Air Force's data processing program for administrative and logistical responsibilities.

Industry speculation in the weeks before the Burroughs selection was that IBM would be chosen again as the most suitable vendor, if for no other reason than to exonerate the original selection committee of any misjudgment. The Burroughs selection came somewhat as a surprise, although industry judgment was that Burroughs was the likely second choice. Interestingly, the Air Force, in announcing the award, specifically said that the dollar saving on the award would not be the $54 million difference between IBM's initially accepted offer and Burroughs' $60 million contract. Rather the delay caused by rerunning the competition at the insistance of Congress and the GAO would result in a loss of $18 million in a "time-money" evaluation, so the net saving would be only $36 million.   *(Continued on page 4)*
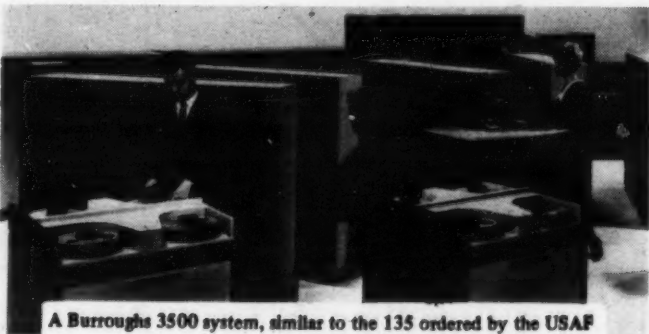
Rental Prices Set For IBM-Compatible Drives

NEW YORK, N.Y. – Management Assistance Inc. (MAI), due to deliver the first of its plug-for-plug IBM compatible tape units in February, announced its rental program for the units this week. According to a company spokesman the plan offers immediate savings of from $75 to more than $4200 per unit per month. A purchase option plan was included in the packet at no additional charge.

The rental plan will include maintenance of the equipment by MAI's own engineering staff. MAI has local customer service locations in 120 cities, and has a training school for engineers outside Philadelphia, Pa. The purchase option offered allows 50% of the first year's rental, and 25% of the second year's rental to be applied against purchase of the units.

Upgrading Possible

The 7200 series of MAI units can be upgraded to the MAI 2400's. That is to say that a present user of IBM 729 units who is thinking of moving to a 360 system can buy an MAI drive, use it on his present system and then, when the time comes, have it upgraded and use it on an IBM 360.

Comparison of IBM and MAI Monthly Rentals

MAI Model	Monthly Rental	Equivalent IBM Model	
2402	$425.00	2401-Mod. 2	$500 per month
2403	$650.00	2401-Mod. 3	$810 per month
7294	$720.00	729-Mod. 4	$900 per month
7295	$637.50	729-Mod. 5	$750 per month
7296	$760.00	729-Mod. 6	$950 per month

Tape-To-Tape Typewriter Transmission Comes From IBM
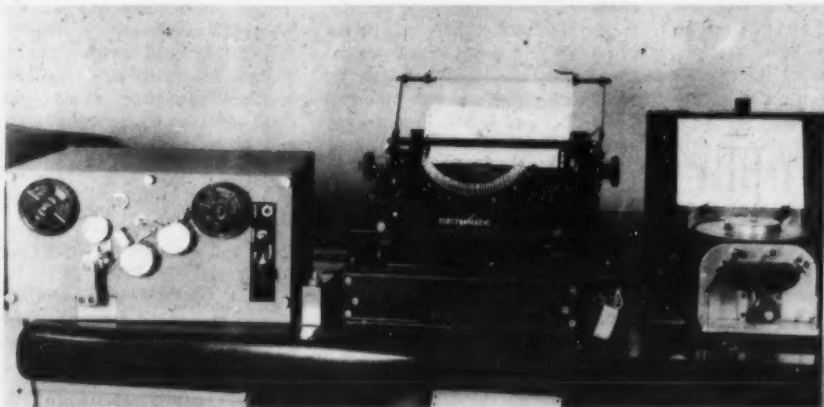
Forty years of progress are illustrated in the pictures. The earlier picture shows how radio was used to allow office electric typewriters to communicate with each other in the 1930's. The right hand picture shows the operation of the remote-record feature which has just been added to the IBM Magnetic Tape/Selectric Typewriter system. (Pictures courtesy of Communitype Corp., New York, and IBM.)

A new form of magnetic tape-to-tape transmission will be added to IBM's capabilities next April when the first deliveries of a new version of the Magnetic Tape Selectric Typewriter are received by customers. The transmission system is over voice grade lines, at an effective rate of about 14 characters per second from the 24,000 character cartridge. Each unit costs between $11-$13 thousand dollars depending on the options involved.

The new system is the realization of an old dream of IBM's. Before World War II IBM exhibited the same general capability – using radio transmission at the 1939 World's Fair. Subsequently the division concerned was sold. The upper picture shows an even earlier model.

The new systems are primarily

(Continued on page 3)

Editorials

Only This Good?

The long delay is over and now we have what we sincerely hope is the final part of the Air Force Phase II story. In general, it must be said that the computer manufacturers have come out of a very nasty affair looking good. IBM, the original winner which then lost out in the renegotiations, played a straight game. Honeywell, the original loser and most vehement protestor, still did not get the contract, but did establish some important principles. Burroughs, the final winner, showed that its systems and software were fully capable of meeting the tremendous demands the Air Force had to make — as did RCA, the other qualified bidder.

But still, there were some unfortunate parts of the story. The prime misfortune was that during the investigations after the original award, no one in the Air Force saw that there was a possibility of saving fifty million dollars, which was the differential between the bids.

Now the Air Force is spending more for evaluations than anybody we know of. So it appears that the state-of-the-art of evaluation is such that a mistake of fifty million in one hundred and fourteen million is still possible.

Wow!

Into The Boardroom

How can an EDP manager help design a management information system when he does not know how management makes its decisions?

Obviously, not very well.

And "not very well" designed management information systems tend to be at best, decorative and at worst, disastrous.

If you are involved in designing an MIS — why not try to get permission to sit in on the board meetings, the conferences, etc. — and to talk frankly afterwards to the participants.

Not once or twice, but as a matter of course.

It is probably necessary.

Welcome The Wives

When we started COMPUTERWORLD some time ago, we called it "The Newsweekly for the Computer Community." That last word, "community", was deliberately chosen to include not merely the professionals in the industry -- but also their wives and children. We felt, and still feel, that there is altogether too little recognition given to them at present — by their husbands' employers, by his colleagues, and often by the men themselves.

What we did not know, however, was whether these wives wanted to be recognized as part of the community. We did not know if they would read COMPUTERWORLD, and take any interest in us. In short, we did not know if we had the right to claim them as readers.

We do now. Our mailbag has told us.

We're most pleased to hear from them and know of their active role in the computer community.

Computer Development Of The Year: Look Where The Logic Is Now!

The major development in computers during the past year is hidden in the diagram below.

The diagrams show a familiar scene — a central computer with its standard peripherals around it; a controller with the data transmission lines; a remote controller with the printers, display units, etc.

Nothing here to excite you, apparently. But look at the shading. The shading indicates where there are logical elements in the system. In the diagram on the left there is only a single box shaded. The grey of the central computer shows its preeminence in operation.

By contrast the diagram on the right has grey all over! Grey in the controller, actually in the computer room, indicating that there is some programmed logic there. More grey shading appears down at the remote controller, showing further internal programming. And on one of the display units we find grey shading again. Four grey areas where there was only one. This system, then, is very, very different from its sister system on the left and this is the computer development of the year 1967.

This opens a whole new world to the operating systems designer.

It also opens a new world to programmers and data processing managers. For it means that the programming manager must now add to his already long list of necessary skills an ability and knowledge of this new role for "scientific" computers. If they are going to be used properly in and around his operation, he must obviously have a pretty fair understanding of them.

The firms which make these computers — such as Digital Equipment, Interdata, B.I.T., Varian, etc. — are also having to learn the problems of this new type of use of their computers. There are, of course, problems as well as successes.

COMPUTERWORLD is planning to keep in close touch with these developments in the coming months.

Grey areas indicate presence of logic
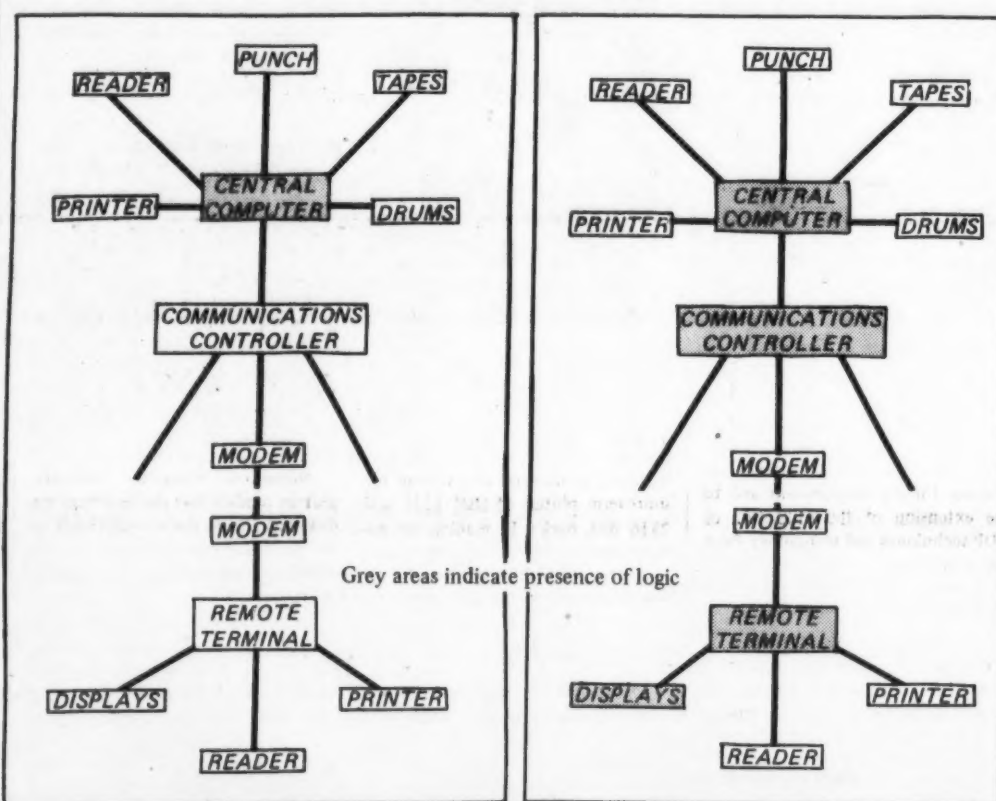
Letters to the Editor

To the Editor:

If soap operas touch reality, many wives have trouble with roving-eyed husbands. When a bouquet of roses appears at the door for no reason, many wives think hubby has "outside interests".

I'm beginning to understand how these women feel. I have not one but many rivals. I know WHO they are, but how to win back my husband's undivided attention is another thing. I am a computer widow. My winking eyes cannot compare to their blinking lights. My whispers of love do not come up to the whirls and rumbles of a program running smoothly.

My mind seems to have been programmed to normal household chores. My "master unit" does not have a subroutine for mathematical equations and my checkbook proves it.

I do work for less per hour and do not have to be de-bugged or overhauled.

My memory unit is marvelous for birthdays, anniversarys, and shopping dates, but there seems to be an access failure when it comes to repeating that which was explained to me about the 8900, 360/30, bites, bits, and real-time.

COMPUTERWORLD is no help. Until each word is assimilated, digested, and put into his memory unit, our daughter and I are nonexistent.

My secret ambition is to unplug all computers . . . just long enough for my husband to look up. To receive this one glance would satisfy my control unit, feed my memory with good thoughts, and probably cause me to plug them back in, instead of stapling, spindling, folding and mutilating everything on his desk.

Mrs. Vincent P. Cackowski
Wheaton, Maryland

Ed. Bet he'll look up before finishing *this* issue!

To the Editor:

A newsletter recently published by a computer manufacturer contained information on average salaries in the data processing industry for Arkansas, Louisiana, Oklahoma, and Texas. I am advised the data was compiled from your October 4th and October 11th, 1967 COMPUTERWORLD.

I would like to obtain more detailed information as to the statistics used in compiling the information, such as:

1. Number of employees in the average data processing center.

2. Volume of business handled by the average installation.

I am interested in comparing area averages to an NCR 315 installation employing a manager, one programmer, and two key-punch operators in a center handling approximately $2,000,000 in annual business.

I should welcome any suggestions you might have.

Lloyd Smith
Vice President Personnel
Triton Insurance Company
Perry, Oklahoma

Ed. We're sending you a complete set of the salary survey articles recently run in COMPUTERWORLD. They provide the background data for calculating the average number of employees per installation. On point two, we have not seen any good data; since most computer centers run as an internal service function, records are difficult to compile.

Sam Alexander: The Pioneer Who Was Always Active

Samuel Nathan Alexander, an internationally known pioneer in the automatic digital computer field, died December 9, 1967. Mr. Alexander, 57, was a Senior Research Fellow with the National Bureau of Standards, U.S. Department of Commerce.

Major Influence

Less than one month before his death, Mr. Alexander flew to California to accept formally the Harry Goode Memorial Award of the American Federation of Information Processing Societies. The citation for this prestigious award well summed up Mr. Alexander's career. "For almost 22 years, Samuel N. Alexander has probably influenced more than any other individual the introduction and development of automatic data processing techniques and systems into the operations of the Federal Government."

Computer Pioneer

Mr. Alexander contributed to the birth of the computer age. He directed a group at NBS which developed SEAC, one of the first of the truly modern electronic machines, in 1950. In 1946, he was assigned the responsibility of organizing within the National Bureau of Standards a group to conduct a research and development program for the U.S. Army in electronic components suitable for use in automatic digital computers. From this beginning he established the first laboratory entirely oriented to the promotion of the research, development, design and application of automatic data processing devices and systems for the Government and to the extension of the utilization of ADP techniques and technology from the solution of scientific problems to the more complex information handling and management problems.

Advisor to Governments

Under his supervision, the NBS Computer Laboratory became the central source of technical assistance to federal agencies seeking advice on the potential applications of ADP systems to the accomplishment of their specific missions. Mr. Alexander also provided technical advice and assistance not only to representatives of the growing industry but also to the representatives of governments of foreign countries.

Born in Wharton, Texas, he received physics and electrical engineering degrees from the University of Oklahoma in 1931, and from MIT in 1933. He continued graduate study at MIT until 1935 when he became a physicist for the Simplex Wire and Cable Corp. in Massachusetts.

Mr. Alexander came to Washington in 1940 as a physicist for the Navy Department. From 1943 to 1946, he was senior project engineer for the Bendix Aviation Corp. He joined the National Bureau of Standards as chief of the electrical components laboratory in 1946.

EDPeople Bad Guides For MIS, Says AMA Speaker

New York, N.Y. - A speaker in the American Management Association's orientation seminar on "The Planning & Implementing Computer-Based Management Information Systems" told his audience that the EDP trained person was the wrong type to advise on the management information systems. S.A. Falk, who is Managing Director of the Management Accounting Center, Boston, based his objection to using EDP people in this role on their 'infatuation' with large quantities of absolutely accurate data, which he felt was of no value in the context of the actual

S. A. Falk

Says Useless Data & Useless Accuracy Is Often Included

decisions which are made in board rooms.

It cannot be said that he carried his audience - or even his fellow speakers - along with him. Later, talking to Computerworld, Mr. Falk overdid the audience reaction with what may be a characteristic overstatement. 'Would you say "hostile"?' was his comment to the Computerworld reporter. In fact, the audience had been both polite and stimulated by his remarks.

A major disagreement was with Mr. Falk's feeling that a MIS system needed only about 300 variables. These would not necessarily be absolutely accurate - but the inaccuracies would be more than covered up by the unavoidable inaccuracies in such items as the cost of money next year. Others present felt that this was a hopeless oversimplification, and was not what they meant by management information systems at all. One case which was specifically mentioned was the development of a model of the nation's business which was created to investigate the

economic results of changes in the tobacco industry in other sectors of the industrial complex. Here the number of variables was much greater than the size suggested by Mr. Falk.

Some support to Mr. Falks view came however when another speaker told about how his firm - which was just expecting to use $10 million on computing in 1968, was using a model with only 27 variables - and using it successfully.

In this case, as with Mr. Falk, the computer was being used in a real-time mode. Near immediate answers - right in the board-room itself - were a key to the method of using the system. In one case a Stromberg-Carlson display was being used in conjunction with the time-sharing system; in the other cases

Many Disagree — Quote Specific Case Histories

a portable teletype was wheeled into the room, and questions like 'But what would happen IF you only sold HALF as many?' could be answered immediately.

Fast Diskpack Service Offered Nationwide

NEW YORK, N.Y. - Time Brokers, Inc., national brokers of computer time, announced a new plan for short-term rentals of IBM 1316 and 2316 disk packs. In making the announcement, Svend Hartmann, sales manager, said the rentals would be made throughout the U.S. and Canada.

Extended Service

Mr. Hartmann said that the plan would enable users to get disk packs fast for short terms. Time Brokers has provided this service to its customers for some time, but the new plan will extend the service to a larger portion of the industry.

Numerous computer industry sources predict that the lead time for disk packs from the manufacturer to the customer is likely to remain high. IBM has long quoted delivery time as six months.

Immediate Delivery

Time Brokers offers immediate delivery on short-term leases. The rental charge for an IBM 1316 disk pack is $1 per day for a minimum of 25 days. The larger IBM 2316 disk packs rent for $1.25 per day. These rates are f.o.b. New York.

Firm Formed To Represent Digital, Analog Manufacturers In New England

WINCHESTER, MASS. - A new engineering representative firm which will represent such companies as Wyle Laboratories, Graham Magnetics and Ferroxcube in the New England states has been formed by Richard M. Horowitz and Joseph F. Bartholomew. The firm, Hobart Associates, is located at 750 Main St., Winchester, Mass.

Specialties

Hobart will specialize in handling state-of-the-art digital system and sub-system equipment, as well as advanced analog techniques.

Mr. Horowitz has been affiliated for the past twelve years with M.I.T.

Lincoln Laboratory, and has been a staff member there for the last eight years.

Mr. Bartholomew was formerly district manager for Consolidated Electrodynamics Corp., vice president of Epsco, Inc., and most recently New England regional manager of Wild Associates.

New England Representative

Hobart Associates has been appointed New England representative for Allied Systems Corp., Calma Co., Computer Labs, Epsco, Inc., Ohtronics, Inc., RO Associates, and Spatial Data Systems, in addition to the firms previously mentioned.

IBM Offers Typewriter Data Transmissions

interesting as a system concept which may allow some work not to have to go through the central computers. As yet there are no converters to allow the MT/ST tapes to be read into IBM computer systems. If and when such a possibility became practical however the new units would form part of an extremely powerful network connecting the secretarial

desk directly into the computer complexes. It is expected that this will first occur when the MT/ST tapes are accepted as input to the Data-Text system.

The operation of the unit can be effectively tape-to-tape, although the output is directed from the typewriter - and not from the tape itself. Similarly the typewriter at the receiving end is used as the standard reception unit.

The operation of the unit can be unattended, but this is not being recommended. In testing it has been found that a new, untrained operator can effectively use the equipment after a few minutes training. The training can - and has - been given from the other end of the transmission. (This actually happened during the testing procedures when an operator was taken ill.)

=EDPeople=
Strickland To National Computers

Edward E. Strickland has been elected Board Chairman of *National Computer Systems*.

Norman Hardy has been named manager of Operating Systems Programming for *Tymshare, Inc.*

Richard A. Hirschfield has been appointed manager of the Fairfield, N.J. office of *Computer Applications, Inc.*

Anthony V. Banes has been named Senior Computer Systems Consultant for *Compata, Inc.*

Marvin F. Lewis was named manager of the new Houston Information Service Dept. office of *General Electric.*

Emanuel J. Otis was named V.P. and general manager of Computer Development and Standard System Division of *Control Data Corp.*

Arthur F. Phinney was elected to the Board of *VIP Systems Corp.*

Robert J. Hill has been promoted to manager, Operations, Planes & Stacks at *Feroxcube Corp.*

Raymond A. Hay has been named general manager of the Information Systems Division at *Xerox Corp.*

Five key managerial appointments were announced by *Computer Science Corp.'s* Texas operations: Robert C. Hall, manager of the new Dallas-Fort Worth office; Dr. Neville A. Black, manager of the new Department of Aerospace Sciences; James R. Hills, Jr., manager of Scientific Applications; Charles J. Schroeder, manager of Commercial Applications; and Irwin R. Oats, senior staff consultant.

Paul D. Oyer has been named director of education for *Computer Usage Education, Inc.*

Lamar Whitcher has joined *Control Data Institute* as staff specialist.

Richard S. Frary was appointed head of the new *Univac Federal Systems Division Systems Engineering and Applications Programming Group.*

Jack Van Kinsbergen has been named Senior Technical Advisor with *Programming Sciences Corp.*

Donald W. Dubois has been elected V.P., Credit Administration for the Computer Leasing Division of *Leasco Data Processing Equipment Corp.* The Division also named Cyrus Marder V.P. for Administration and Donald Rehner V.P. of Marketing.

Neil Feishman has been appointed Director of Communications at *Programming Sciences Corp.*

Gerald B. McKenna has joined *Ferroxcube Corp.* as professional placement specialist.

Leslie Patron has been appointed Assistant Vice President at *Programming Methods, Inc.*

J. Burgess Jamieson has been named general manager of the Commercial Products Division of *Electronic Memories Inc.*

Univac 494 Gets Swedish Order

Stockholm County, Sweden, has ordered a $2 million Univac 494 Real-Time computer. The computer will be installed early next year and will be the nucleus of what is claimed to be the most advanced medical data processing system in the world. When completed, the installation at Danderyd Hospital will be a totally-integrated medical system, encompassing medical management, control and treatment.

The Minuteman Division of North American Rockwell Corp. has ordered an *SDS Sigma 7* computer to assist its engineers in evaluating and refining the inertial navigation system used in the USAF Minuteman III intercontinental ballistic missile. The computer will process and evaluate data generated during flight tests,

Orders and Installations

static tests, and environmental tests of the missile and its components.

General Electric's first van mounted, mobile process control computer was recently delivered to *Phillips Petroleum Co.* Bartlesville, Okla. The process computer, a GE-PAC 4020, will be used for process optimization and demonstration of computer control in petroleum and chemical plants.

Systems Engineering Laboratories, Inc. has announced the receipt of a contract from *A.C.Electronics, Milwaukee,* for six SEL 810A computers.

135 B-3500 Systems For USAF; Re-Procurement Costs Govt. $18M

In White Plains, an IBM official commented, "Naturally we're disappointed. In the second round of bidding we offered an even better system and even greater savings to the Government than the first time. But apparently Burroughs was able to propose a lower price and still meet the Air Force's requirements."

Interdata Corporation: Correction

Because of a typographical error, a reference to Interdata appeared in Vol. 1, No. 17 issue of COMPUTERWORLD; in a story that concerned Interpublic Group of Companies, Inc. COMPUTERWORLD is aware that there is no connection between Interdata, with offices in Oceanport, N.J. and Cupertino, Calif., and Interpublic. Our sincere apologies to Interdata.

Hand-Held Computer

Grumman Gets World's Smallest Computer

MINNEAPOLIS, MINN. – The smallest programmable computers ever built have been delivered to Grumman Aircraft Engineering Corporation for use in the Grumman Mohawk OV-1 Aircraft. The tiny microelectric digital computers were developed by Control Data Corporation under a contract awarded last April.

Thirteen Pounds

Designed to MIL-E-5400 specifications, the CDC system measures: only 4½ by 6¾ by 8½ inches, and weighs less than 13 pounds.

The entire computer system plugs into the aircraft's avionics system as a complete package. It is mounted in the cockpit area of the aircraft.

Non-Destructive Readout

Featuring a four microsecond cycle time, the computer's memory has a capacity of 1,280 12-bit nondestructive readout words, expandable to 7,680 words. It has an additional "scratch pad" memory consisting of 128 24-bit destructive readout words, expandable to 256 words.

The computers are so small that when they were first exhibited last summer, COMPUTERWORLD published the first known "life-size" picture of a computer in the public press. (See Sept. 20 issue.)

New Literature
Data On Displays, Plotters, Tapes . . . etc.

Systems Analysis and Synthesis Applied to Occupational Instruction in Secondary Schools. Leonard C. Silvern. 102 pp. $6. Order from Education and Training Consultants Co., 815 Moraga Dr., Los Angeles, Calif. 90049.

Dr. Silvern was asked by U.S. Office of Education to study the ways used by vocational and technical teachers to update themselves on new materials and procedures. This report concentrates on course content and how it is kept current. Dr. Silvern views the process as a cybernetic system model relying largely on human information processing. A major step forward to simplify and formalize education system technique. Edition limited to 1,000 copies.

Brochure on the DPS-6 Digital Plotting System. 12 pp. Free to users of DP equipment. Order from Milgo Electronic Corp., 7620 N.W. 36th Ave., Miami, Fla. 33147.

This second edition of the DPS-6 brochure shows the use of digital plotters applied to fields as diversified as civil engineering, finance, marketing and construction. The Milgo DPS-6 Digital Plotting System includes an X-Y plotter, an input source and supporting software.

Adage Graphics Terminal Brochure. 10 pp. Free. Order from Marketing Services Dept., Adage, Inc. 1079 Commonwealth Ave., Boston, Mass. 02215.

The brochure describes Adage's Graphics Terminal, a general-purpose CRT display system. Included is information describing the system highlights, system concept, standard models AFT/10, AGT/30, and AFT/50, as well as standard options and software.

Introducing the Balanced Tape Audey K-68. Free. Order from Audio Devices Inc., 235 East 42nd St., New York, N.Y. 10017.

A technical data sheet describing the newly-introduced Audey K-68 extended reliability magnetic tape for modern digital computers. The tape averages less than one permanent write error per pass with a maximum of two permanent write errors in any given pass, in a 200-pass test.

The Transition To On-Line Computing: Problems & Solutions. Edited by F. Gruenberger, Thompson Book Co., National Press Building, Washington, D.C. 20004. $9.

This contains chapters on "What is On-Line?", "Time-Sharing and Multi-processing Terminology", etc.

Hybrid Computation in the Process Industries. Electronic Associates, Inc. West Long Branch, N.J.

An 83-page compilation of hybrid applications which deals with the philosophy of hybrid computation in process industry applications.

Where to Write

Computer Corporation of America (information retrieval) 565 Technology Square, Cambridge, Mass. 02139.

Data Disk, Inc. (disk memory) 1275 California Ave., Palo Alto, Calif. 94304.

Ikor, Inc. (keyboard) Second Ave., Northwest Industrial Park, Burlington, Mass. 01803.

Management Assistance, Inc. (tape unit rental) 300 E. 44th St., New York, N.Y. 10017.

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Expansions
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FRANKFURT, WEST GERMANY – *Honeywell, Inc.* will build a factory in West Germany for production of computers. Construction of the new plant, to be located in Heppenheim, 65 miles south of Frankfurt, is expected to begin early in 1968, with occupancy by the end of the year.

First phase plans call for 43,000 feet of floor space and employment of over 300 persons. The plant is Honeywell's second outside of the U.S. for the production of computers.

Varian Data Building New 100,000 Sq. Ft. HQ

PRINCETON, N.J. – *Data & Information Products Inc.,* subsidiary of *Applied Data Research, Inc.,* has established a branch office in Detroit. B.T. Quirk has joined the company and will manage the office.

The Detroit office will permit ADR to expand its Midwest representation for leasing Autoflow, an ADR proprietary software product.

The Detroit office is one of several mid-west offices planned by DIP during the next year. Each will represent ADR and will continue to market the data processing products and services that DIP now represents.

SAN FRANCISCO, CALIF. – *Honeywell EDP* formally dedicated a new branch office in the Fox Plaza Bldg. in San Francisco last week. The new facility, headquarters for local sales and customer support of the Series 200 computer family, includes three classrooms that will be used for teaching fundamentals of data processing, programming and courses on systems design and development. A Honeywell 200 computer will be installed by next March for use as a teaching tool, and as an aid to new customers.

Honeywell EDP has 90 employees in its San Francisco office.

NEWPORT BEACH, CALIF. – Varian Data Machines is expanding the size of its new headquarters, now under construction, to 101,000 square feet. The facility, in the Irvine Industrial Complex at Newport Beach, Calif., will replace present plants also located in Newport Beach. The new headquarters are expected to be available by early spring.

Calendar

CONFERENCES, SYMPOSIA

Jan. 18 - 19, 1968, Tampa, Fla. – First Annual Simulation Symposium, Sheraton-Tampa Motor Inn. Contact: First Annual Simulation Symposium, P.O. Box 1155, Tampa, Fla. 33601.

Feb. 22 - 23, 1968, New Orleans, La. – Assn. of Data Processing Service Organizations Management Conference. Contact: Jerome L. Dreyer, Automatic Data Processing, Inc., 1040 Highway 46, Clifton, N.J. 07013.

Mar. 14 - 16, Houston Tex. – Sixth Annual Symposium on Biomathematics and Computer Science in the Life Sciences. Contact: Office of the Dean, Univ. of Texas, Graduate School of Biomedical Sciences, Division of Continuing Education, P.O. Box 20367, Houston, Texas 77025.

USERS MEETINGS

Jan. 22 - 23, North Hollywood, Calif. – "IV League", users of Informatics' Mark IV File Management System, third meeting. Sportsmen's Lodge.

Mar. 14 - 16, West Lafayette, Ind. – Second Annual Indiana Computer Users Meeting (INCUM). Sponsored by Purdue chapter of ACM. Contact: David G. Fryer, G-161, Math Science Bldg., Purdue University, West Lafayette, Ind. 47907

One Source Of Data; Coming ACM Seminars

The Association for Computing Machinery will continue its program of professional development seminars this winter with eight tutorial and state-of-the-art seminars to be presented in 26 cities, during January, February and March. The seminars are as follows:

"The Selection and Evaluation of Computer Personnel". Half-day. Presented by ACM Professional Development Committee in cooperation with ACM Special Interest Group on Personnel Research. Instructors: David Meyer, Technical Staff Manager, IBM Research Division, Yorktown Heights, N.Y.; and Ashford Stalnaker, Assistant Professor of Management Science, Georgia Institute of Technology. Fee: $15 for ACM member. $20 for non-members, $17.50 for non-member employees of ACM corporate members.

Course will review the status of programmer selection methods, aptitude and proficiency testing, and changing nature of computer personnel. Should interest computer operations, systems and programming managers, and computer education specialists.

Presented 1-5 P.M. as follows: Jan. 9, Sheraton Cleveland Hotel, Cleveland; Jan. 11, Sheraton Cadillac Hotel, Detroit; Jan. 12, Sheraton Chicago Hotel, Chicago; Jan. 15, Fairmont Hotel, San Francisco; Jan. 16, Century Plaza Hotel, Los Angeles.

"Digital Simulation of Physical Systems". Half-day. Presented by ACM Professional Development Committee in cooperation with Special Interest Committee on Digital Simulation. Instructors: David Brandina and Arthur Wachowski, both of ITT Research Institute, Chicago. Fee: same as above.

Seminar will survey use of digital computers in simulation of continuous systems.

Presented Jan. 26, Hilton Inn, St. Louis, Mo.

"File Structures for On-Line Systems". Full-day. Seminar developed by Computer Command and Control Co., Philadelphia. Fee: $40 for ACM members, $50 for non-members, $45 for non-member employees of ACM corporate members.

Seminar covers functional requirements and techniques of structuring large data bases for storage, retrieval and modification of information; monitoring, efficient utilization, and protection of "private files"; and a discussion of the multilist system and hierarchical data structures with examples and techniques. Oriented toward programmers, analysts and managers engaged in development and implementation of on-line retrieval-query-response, and management information systems.

Presented Feb. 26, Somerset Hotel, Boston; Feb. 27, Warwick Hotel, Philadelphia; Mar. 4, Sheraton Columbus Motor Hotel, Columbus, O.; Mar. 5, Holiday Inn, Baltimore.

"Managing the Computer Center". Full-day. Instructor: Dr. Malcolm H. Gotterer, Professor of Business Administration, Pennsylvania State University. Fee: same as for "File Structures" above.

Course emphasis on organizational strategies, policy and planning factors, effective staffing methods, establishing financial and budgeting control. Tutorial intended for present and potential managers of computer operations, programming and systems.

Presented Feb. 29, Pittsburgh Hilton Hotel, Pittsburgh.

"Computer Graphics". Full-day. Instructors: Andries von Dam, Assistant Professor, Brown University and Samuel M. Matsa, Manager, IBM Scientific Center, New York City. Fee: same as for "File Structures" above.

Course will cover graphic concepts and terminology, display hardware and software, data structures and applications. No prior experience with computer graphics is assumed.

Presented Feb. 2, Holiday Inn, Hampton, Va.; Mar. 29, Warwick Hotel, Philadelphia.

"Decision Tables for Computer Systems Design and Programming". Full-day. Instructors: Sol Pollack and Harry Hicks of Information Management Inc., San Francisco. Fee: same as for "File Structures" above.

In-depth tutorial course will cover use of decision tables in analysis, design, implementation documentation, and maintenance of computer systems. Intended for programmers and systems analysts.

Presented Mar. 1, Fairmont Hotel, San Francisco; Mar. 11, LaSalle Hotel, Chicago; Mar. 12, Sheraton Ritz Hotel, Minneapolis; Mar. 15, Sheraton Dallas Hotel, Dallas; Mar. 15, Sheraton Lincoln Hotel, Houston.

"Information: Its Storage, Retrieval, and Management". Two-days. Prepared by Auerbach Corp., Philadelphia. Fee: $75 for ACM members, $95 for non-members, $85 for non-member employees of ACM corporate members.

Course will cover information storage and retrieval systems on the first day and data management on the second. Aimed toward experienced programmers and systems personnel.

Presented Jan. 18-19, Shamrock-Hilton Hotel, Houston; Jan. 22-23, Cabana Motor Hotel, Atlanta; Mar. 7-8, Roosevelt Hotel, New York; Mar. 11-12, Somerset Hotel, Boston.

"Time Sharing Systems". Two-days. Instructors' John Morrissey and Andy Kinslow of Morrissey Associates, New York software consulting firm. Fee: same as "Information" above.

Emphasis on application and techniques of implementation, with attention to hardware and software capabilities, design specifications, cost estimating, testing and system integration.

Presented Feb. 15-16, Century Plaza Hotel, Los Angeles; Feb. 19-20, Edgewater Inn, Oakland; Mar. 21-22, Sheraton Park Hotel, Washington; Mar. 25-26, Jung Hotel, New Orleans.

Enrollment forms and additional information are available from J.M. Adams, Jr., ACM, 211 East 43 St., New York, N.Y. 10017.

Matched To Operator
Changeable Keyboards Save Errors?

BURLINGTON, MASS. – A new approach to the problem of erroneous keyboard coding is offered by Ikor, Inc. with the introduction of their Model 6000 Keyboard. The keyboard, which is similar in solid-feel responsiveness to that of an electric typewriter offers the operator the advantages of familiarity. The important fact is that the individual user can choose his own configuration. If, for example, the operator is accustomed to a keypunch machine the Ikor keyboard can be arranged with the number keys in two columns similar to a keypunch. Or, if additional control keys are required at any time, they can be snapped in quickly at a nominal cost. Any configuration is available, and the user can change or add keys by snapping them in and out of place without the need for changing basic circuitry or wiring in the new keys.

Eliminates Common Error Sources

The keyboard, which contains all solid-state circuits, eliminates some of the common sources of coding errors. There are no lights to burn out or become masked by dirt and no mechanical links to fail. The coding for each key is contained within the key module, and the code generation utilizes universal Transmit and Receive Bars which serve the same function for all keys.

Each key contains its own character or function code (compatible with standard ASCII 7-bit format). When the key is depressed, an AC couple is established between Transmit and Receive bars thus generating a code unique to that key. Normally, activation of a key generates a standard 7-bit code plus 1 bit for odd or even parity. A strobe output at the interface insures that all character bits have reached equilibrium before they can be transmitted.

A closed loop circuit which provides a detection system for discrimination against spurious signals on a basis of both signal level and time is inherent in the system. Rejection of external noise provides particular advantage in communication centers where multiple installations are operated in close proximity.

The keyboard provides clocked output and may be directly interfaced with digital printers, computers CRT's, alphanumeric displays, etc. It provides either serial or parallel inputs to any information system, using standard 7-bit ASCII code format.

Competitive Cost

Competitive with conventional keyboards on the market, the Ikor model costs $200 in production quantities and slightly more than $300 in smaller quantities.

Computers Make The French Forget Sex!

In France the French Academy is the arbiter of the meaning of words. And, although the usage of words taken straight from English is probably not very popular just now, the Academy used the noun "l'information" for electronic data processing. Unfortunately it appears that in their hurry they have not defined whether it is masculine or feminine. So apt.

Info Retrieval System Benchmarks

Here are the advantages claimed for the new Model 101 Information Retrieval System described on page 1 of this issue.

*High Speed Retrievals

The Model 101 produces immediate answers to complex queries. No time consuming searching of files is required.

*General Applicability

A uniquely flexible storage concept provides the Model 101 with the capability of accommodating virtually all types of information.

*Easy to Learn

Operation of the system can be learned in a few minutes. Straightforward retrieval and file maintenance procedures eliminate the need for lengthy and costly training.

*Large Storage Capacity

The capabilities of the Model 101 apply to large as well as to small files. Over 100,000 individual records can be accommodated.

*Multi-File Retrievals

Any number of related and unrelated files may simultaneously be stored. Queries requiring cross-referencing among several files can be specified as readily as single file queries.

*Full-Range Retrieval and File Maintenance Capability

Any record or combination of records may be retrieved or updated directly.

*Arbitrary Format

Records within a file need not have identical format; if desired, every record may be different.

*COBOL-Compatible Tape Input and Output

Data input and output is handled by COBOL-compatible magnetic tape, allowing the Model 101 to be readily integrated with other systems. In addition, convenient card input and line-printer output is also provided.

*Retrieval Speed Insensitive to File Size

Since the Model 101 is not a sequential search system, an increase in file size does not materially affect retrieval times.

*Ready for Immediate Use

No costly in-house programming effort is required. The Model 101 is fully operation-tested and ready for immediate installation.

Hardware Configuration

The following computer configuration is required for the operation of the Model 101.

Processor: IBM System/360, model 30 or larger.

Core Storage: 65K bytes minimum.
Data Storage: 3211 disk drives (minimum 1, maximum 4).
Operating System: DOS.
Peripherals: Three magnetic tape drives, line printer, card reader.

Benchmark Tests

Data Used: U.S. Census (1960).
Size of File Used: 24,000 records.
Information in File: Each record contains 10 fields – age, sex, race, mother tongue, highest school grade completed, occupation, number of room in dwelling, size or type of region or residence, family size, and household identification number.
Computer Configuration Used: System/360, Model 40, 128K core 1 disk pack for data storage, 1 disk pack for operating system (DOS), line printer, card reader.

Request A.
   1. FIND ALL ITEMS FOR WHICH
      SEX = FEMALE
      RACE = WHITE
   2. COUNT ITEMS IN 1
   3. PRINT COUNT IN 2
Number of answers found: 10,778
Total time: *2.68 seconds.* This includes the time to read the request cards, print out the request cards, perform the request, and print out the count.

Request B.
   1. FIND ALL ITEMS FOR WHICH
      RACE = SPANISH
      MOTHER TONGUE = NOT SPANISH
   2. DELETE ALL ITEMS IN 1
Number deleted: 327.
Total time: *1.32 seconds.* This includes the time to read the request cards, print out the request cards, and perform the request.

Request C.
   1. FIND ALL ITEMS FOR WHICH
      AGE = 93 OR 94
   2. FOR EACH ITEM IN 1
      PRINT OCCUPATION AND FAMILY SIZE
Number of answers found: 5

Total time: *2.78 seconds.* This includes the time to read the request cards, print out the request cards, perform the request, and print out the desired information.

'Why Don't Companies Try To KEEP Their Good People?'

By Everett D. Parker
Personal Page Editor

A major activity of any data processing firm is recruiting good people. To achieve their recruiting needs, companies spend thousands of dollars each year for newspaper and magazine advertisements, agency fees, relocation expenses, development of expensive and appealing benefit packages. Recruiting used to be a function of the Personnel Department. Today recruiting has become a skill and a responsibility which demands its own place among the management ranks of the large firms and can become a full-time occupation of the manager of a smaller company.

INTRODUCTION. If recruiting is so expensive, why do companies do so little to retain employees, especially good ones. If recruiting is a skill now assigned to an Employment Manager, retaining employees is a skill set aside for the manager.

Every manager is confronted by the awesome turnover percentages of this industry, and upon occasion is himself tempted to "move on" or "make a change". Below are some thoughts and points-of-view on the subject. Statistics on the turnover rates are telling but often "tell" what we want them to. Let's look at the industry and some of the problems it has to face in retaining good people.

ME FIRST! A small percentage of employees work to their own advantage and self-interests exclusively They are motivated in such a way that money, benefits, prestige, personal gain are the primary sources of satisfaction. The desire to work for a reputable firm, a wholesome desire to excell at a professional level, an eagerness to give as well as to receive — none of these qualities are included in the single-minded, tunnel-type decisions these people make

Personal Page

when looking for a job. Sadly, some of these people are skillful, but they trip over their own impoverished attitudes in an attempt to "get ahead".

HARDWARE AND SOFTWARE. There is quite a natural tendency for a high turnover rate in data processing. It is the nature of the work for a professional to concentrate his attention on a given piece of hardware and a static display of software. Once a man has developed a skillful familiarity with the machine and its applications, he may legitimately feel that it is time to move. Not for the sake of money will this man look around, but for the opportunity to advance his

skills on newer hardware and more versatile software. How many men do you know who, within the past year, have left a 1401 installation for a chance to learn the 360?

To those employees who are professional, not even a supervisory position will be appealing, if the offer comes too soon or would radically affect the opportunity to broaden and deepen their data processing experience. Promotions are not always solutions. For the young professional, challenge is a greater incentive than easy opportunity. Knowledge of a variety of hardware and software will only enhance a man's future position, not limit it.

IGNORANCE. We could speak of many more elements which make up the high turnover rate in data processing. All the traditional reasons apply to this field as they do to many others. One which is common to all fields but may carry an inordinate

percent of the turnover traffic is incompetence. Let me make a flat statement and please challenge it as you will. Ignorance is bliss: in data processing it's also lucrative. Sixty to seventy percent of the people in data processing do not understand data processing on anything more than a superficial basis. (Don't come glowering back with a furious retort. I have interviewed over a thousand people in and around this industry and am most confident of my hippocket suggestion.)

HOW TO RETAIN. How can you keep your attrition rate to a minimum? Aside from the problems intrinsic to data processing which cause such high turnover, what can a company's management do to limit its turnover?

RECRUITER. Everyone plays a part in retaining employees — even the employee himself. The recruiter must represent the Company intelligently and in an objective fashion. The recruiter must describe the available position realistically and fairly. A misrepresented job as well as a misrepresented product is doomed from the beginning.

COMPANY. It is a consistent industrial principle that the company's product can lend satisfaction and even pride to an employee. In data processing, manufacturer or customer, this sense of satisfaction can be derived from the Company's approach toward business and its attitude towards its employees. Currently data processing is of itself prestigious, if not even mysterious to the outsider. Such prestige compliments the worker, no matter how sophisticated. The Company's attitude and philosophy should be clear and as precise as possible. Eventually applicants with similar attitudes will gravitate towards such an environment. If your company

300 CDC Terminals To Computerize Box Offices During '68

NEW YORK, N.Y. — Computerized electronic box offices offering reserved seats at box office prices to major entertainment, theatrical and sports events will soon be used in New York, Los Angeles and Chicago. Ticket Reservations Systems Inc. announced this week that the New York System will begin operation February 1; Los Angeles, March 1; and Chicago by April 1.

The operation works from a central Control Data installation in New York with remote terminals at the "box-offices".

The American Express Company and Trans World Airlines signed a national contract providing for the installation of remote terminals. Major department stores, banks, travel services and supermarkets in the three cities will be linked to a central computer. The central computer "memorizes" all available tickets for the events in the three cities. When a "buy order" is entered, the actual tickets are printed out at the remote location, and the computer automatically removes those seats from the available list.

It is also expected that about 300 terminals will be installed in the three cities by mid-1968. The equipment, valued at $8.7 million, includes 1700 series Control Data computers in the central facility in New York. Control Data is also providing the terminals, which are being delivered on a staggered basis.

Ignorance Is Bliss — In Data Processing It's Also Lucrative!

has a reputation as "a good place to work" your turnover rate will dwindle.

APPLICANT/EMPLOYEE. Once a company establishes realistic standards for employment, it should deviate from them only in the most exceptional of cases. Setting standards is always difficult. But once set, a company should maintain them. In hiring applicants who "measure up" to your standards, you compliment those employees you already have working for you as well as acquire a well qualified new hire.

RECEPTION/INTERVIEWS. The first impression is a strong one. In order to make a good impression some planning is required in the best run companies. With proper procedures built into the system, the applicant should be made to feel comfortable. After several interviews the applicant's possible contribution should be recognized. This can be done by comparing his potential with the successes of your present employees.

ORIENTATION PROGRAM. When a man reports for work, he should be presented with more than just a job. An organization chart, a written statement of the company's philosophy and a presentation of the current year's goals help him to know his company. A brochure with practical information such as parking facilities, local restaurants, etc., help him to know his surroundings. This need not be a professionally prepared brochure, though it would obviously be better. Mimeographed information is better than no information at all.

FOLLOW-UP. All that has been said up to this point is of value if the manager pays attention to the new employee. A manager's job is to manage. The more successful he is at managing his people, the lower the turnover rate. A manager must provide many things but among the most important is recognition of the personal and professional contributions of his employees. If a manager can engender a wholesome spirit of cooperative action and maintain an appreciation for the individual contribution, turnover rate within his group will be kept to a minimum.

CONCLUSION. There is no easy solution to employee turnover in the data processing industry. By achieving standards of employment, recognition for individual contribution, good treatment both financially and professionally, one is apt to eliminate some of the more basic, and therefore more dynamic, reasons for turnover. Good management, from initial interview to latest assignment, will keep turnover to a minimum and develop an employee morale which will enhance loyalty and create professionalism.

Send comments to:
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Cambridge, Mass.

Computer Stocks: Trading Summary

NEW YORK STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Addressograph-Multigraph	77	46 7/8	77	71 1/4	75 3/8	+ 4	+ 5.60
American Research	195	37 3/4	188	174	180 1/2	- 5 5/8	- 3.02
Ampex Corp.	40 3/4	22 3/4	35 3/4	34 1/4	34 3/8	- 5/8	- 1.79
Burroughs	178	80 7/8	178	152 1/2	178	+16	+ 9.87
Collins Radio	114 7/8	53	97	91 1/2	92	- 4 1/4	- 4.40
Control Data	165 5/8	33 1/2	150 3/4	136	140 1/2	-10 1/4	- 6.80
Electronic Associates	30 1/4	16 3/4	24 3/4	23 1/8	23 5/8	- . .	-
General Electric	115 7/8	82 1/2	96 7/8	94 3/4	95 3/8	- 7/8	- 0.91
Honeywell	117 7/8	63 1/2	109 3/4	102 3/8	107 5/8	- 1/2	- 0.46
IBM	648	362 1/2	632 1/2	613 1/2	613 1/2	-23 3/4	- 3.73
Litton	120 3/8	79 1/2	113	107 3/4	108 1/4	- 3 3/4	- 3.35
Nat Cash Register	136 5/8	67 1/8	135 3/4	132 5/8	132 7/8	- 1 1/8	- 0.84
RCA	65 1/2	42 5/8	54	52 5/8	53 3/8	+ 1/8	+ 0.10
Raytheon	117	49	112	106 3/8	106 1/2	- 1/4	- 0.23
Sanders	77 1/4	37 5/8	73 1/4	63	63 1/2	- 7 1/8	- 9.81
Scientific Data	153 3/4	70 3/8	145 3/4	136 1/8	139 1/4	- 5 3/4	- 3.97
SCM	82 1/4	43 1/2	59	55 1/8	56	+ 5/8	+ 1.13
Sperry Rand	65 1/8	28 1/8	62 5/8	59 5/8	60 5/8	- 1 1/4	- 2.02
NYSE COMPUTER STOCK AVERAGE						- 2.46	- 1.37

AMERICAN STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Audio Devices, Inc.	30 3/8	20	27 7/8	24	27 3/8	+ 3 3/8	+14.06
Automatic Data Processing	68 1/2	41 1/2	67 1/4	61 7/8	67 1/4	+ 3 5/8	+ 5.70
Calcomp	45 5/8	34	44	41 3/8	42 3/8	+ 1 3/4	+ 4.31
Computer Applications	47 3/8	14	45 3/8	42 5/8	43 1/8	+ 1/2	+ 1.17
Computer Sciences	67 5/8	18	66 7/8	62	63	+ 2 7/8	+ 4.63
Digital Equipment Corp.	156	29 3/8	150	132	137	- 9	- 6.16
GC Computer Corp.	41	23 1/4	37 1/8	34 1/4	35 1/2	+ 7/8	+ 2.53
Leasco	135 1/4	33 5/8	128 7/8	119	128 7/8	+ 2 1/8	+ 1.68
Levin-Townsend Computer Corp.	75 1/8	10 7/8	75 1/8	62 1/8	75 5/8	+11 5/8	+18.75
Milgo Electronics	15 5/8	5 1/8	13 1/2	11 3/8	13	. . . .	
Mohawk Data Sciences	198 1/2	153 5/8	192 1/2	179	182 1/2	-10 5/8	- 5.50
Planning Research	51	27 5/8	49 5/8	44 1/2	46 1/8	- 1 1/2	- 1.90
Potter Instrument	39 3/4	12 3/8	39 3/4	32 3/4	38 3/4	+ 3	+ 8.40
Randolph Computer Corp.	52 7/8	32 1/4	50 1/4	46	49 3/8	+ 3/4	+ 1.54
AMEX COMPUTER STOCK AVERAGE						+ 0.67	+ 3.52

OVER-THE-COUNTER	1967 High Bid	1967 Low Bid	Friday Bid	Friday Asked	Last Friday Bid	Week Net Change Bid	Week % Change Bid
Applied Data Research	30	3 1/8	26	28	28	- 2	+ 7.78
Bolt, Beranek & Newman, Inc.	30	8 1/4	25	25 3/4	21 3/4	+ 3 1/4	+14.94
Computer Usage	72	20 1/4	66	69	72	- 6	- 8.50
Cyber-Tronics	17 1/2	4 3/4	14 3/8	14 7/8	15 1/2	- 1 1/8	- 7.26
Data Products	23 3/8	2 1/2	21 3/4	22 1/4	22 7/8	- 1 1/8	- 4.92
Digitronics	23	4	23	24	18 1/2	+ 4 1/2	+24.32
DPA, Inc.	16 1/4	4 1/4	13 1/8	13 5/8	13 1/4	- 1/4	- 1.89
Electronic Memories	56 1/2	12 3/4	50 1/4	51 1/4	46	+ 4 1/4	+ 9.24
Fabri-Tek	15 3/4	6	10 5/8	11 1/8	11	- 3/8	- 3.41
LHC Data, Inc.	14 1/2	7 3/8	14 1/2	15	12 1/8	+ 2 3/8	+19.69
Management Assistance	24 3/8	10 1/8	13	13 1/4	12 3/8	+ 5/8	+ 5.05
Memorex	226	63	195	198	208	-13	- 6.25
Optical Scanning Corp.	102	25 3/4	87	86	102	-15	-14.71
Recognition Equipment Corp.	191	48 1/2	178	183	190	-12	- 6.32
Systems Engineering Labs	63 1/4	8 7/8	56 3/4	57 3/4	60	- 3 1/4	- 5.42
University Computing Co.	250	65	245	256	214	+31	+14.49

Govt. Funds Two-Phase Study Of The Growing Computer Community

A government sponsored survey of "information processing" people is now under way. Survey forms have been sent to members of the ACM, DPMA, IEEE (Computer Group) and other organizations. They are being asked to fill in the five-part form, and return it promptly. When the forms are returned, specific precautions are taken to safeguard the information to encourage people to respond, and to make the survey data valuable.

Building Data Base

The survey is being used to find out the actual dimensions of the computer industry — just how many people there are, what they are doing, how well qualified they are, what the people and firms are doing, how much they are making, etc. According to project director Isaac Nehama, the survey will be a start towards building a data base on the industry and the community.

Financed by ARPA

Financing for the survey is being provided by ARPA (Advanced Research Project Agency) and a target date for the release of the data tapes to the societies, and to ARPA has been established. It is intended that the various societies will also provide reports to their membership as to what information is revealed by the survey.

Second Phase

The data created by the respondents to the survey is considered basic to the ultimate goal of preparing a comprehensive data base about the computing profession. After the completion of this phase, a second phase will be initiated which will be devoted to defining the elements of a larger data base about computers and computing. It will also explore methods by which these data elements can be collected.

Black & White — Or Color

New Disk-Memory For Economical T-S Video Displays Announced

PALO ALTO, CALIF. – New from Data Disk, Inc. is a digital/video disc memory for use with time-sharing systems.

The basic system, which sells for $7,270, is claimed to offer opportunities for significant cost reduction in time-shared systems, display installations at hospitals and airports, and instructional systems. The display systems, which can provide black-and-white or color presentations, are in use at Bell Telephone Laboratories in Murray Hill, where they are used with a GE-645.

The disc memories are used in combination with raster-type TV monitors for economic alphanumeric, graphic, and digital television-display systems.

Up to 100,000 bits on each track can be accessed at a 3-megabit rate, or up to 7.2-megabit capacity is available at bit rates up to 216 megabits/second with track combining techniques. Up to 72 completely independent tracks can be provided on a single disk memory. Each track has its own read/write and clock electronics with TTL integrated-circuit interface.